In the Claims:

Please amend the Claims as shown below.

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1. (Currently Amended) A method for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) transforming the digitized acoustic input signal to a time-frequency representation;

(b) ~~utilizing transient detectors to detect~~ detecting transient duration in conjunction with estimating a background noise level in the time-frequency representation;

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(c) for each interval of the time-frequency representation containing significant signal levels, ~~comparing~~ performing a signal-to-noise ratio weighted comparison of the time-frequency representation of such interval ~~with~~ against a plurality of time-frequency spectrogram templates in a signal model and determining a matching spectrogram template in the signal model that best matches the time-frequency representation of such interval~~, based in part on signal to noise ratio~~; and

(d) replacing the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

2. (Cancelled)

3. (Currently Amended) A system for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) means for transforming the digitized acoustic input signal to a time-frequency representation;

(b) means for ~~utilizing transient detectors to detect~~ detecting transient duration in conjunction with estimating a background noise level in the time-frequency representation;

(c) for each interval of the time-frequency representation containing significant signal levels, means for ~~comparing~~ performing a signal-to-noise ratio weighted comparison of the time-frequency representation of such interval ~~with~~ against a plurality of time-frequency spectrogram templates in a signal model and determining a matching spectrogram template in the signal model that best matches the time-frequency representation of such interval~~, based in part on signal to noise ratio~~; and

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(d) means for replacing the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

4. (Cancelled)

5. (Currently Amended) A computer program, stored on a computer-readable medium, for enhancing acoustic signal buried in noise within a digitized acoustic input signal, the computer program comprising instructions for causing a computer to:

(a) transform the digitized acoustic input signal to a time-frequency representation;

(b) ~~use transient detectors to~~ detect transient duration in conjunction with estimating a background noise level in the time-frequency representation;

(c) for each interval of the time-frequency representation containing significant signal levels, ~~compare~~ perform a signal-to-noise ratio weighted comparison of the time-frequency representation of such interval ~~with~~ against a plurality of time-frequency spectrogram templates in a signal model and determine a matching spectrogram template in the signal model that best matches the time-frequency representation of such interval~~, based in part on signal to noise ratio~~; and

(d) replace the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

6. (Cancelled)

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7. (Currently Amended) A method for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) transforming the digitized acoustic input signal to a time-frequency representation;

(b) ~~isolating transient sounds within the time-frequency representation;~~

(c) ~~utilizing transient detectors to detect~~ detecting transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

determining signal strength in the time-frequency representation;

updating a background noise statistic based on the time-frequency representation when the signal strength is under a pre-selected threshold;

(d) ~~rescaling the time-frequency representation of the estimated background noise ;~~

(e) ~~comparing the rescaled~~ performing a signal-to-noise ratio weighted comparison, when the signal strength is greater than the pre-selected threshold, of the time-frequency representation ~~of each transient containing any signal of interest with~~ against a plurality of time-frequency spectrogram templates in a signal model; ~~and~~

(f) determining a matching spectrogram template in the signal model that best matches such representation; and

~~(f)~~(g) replacing the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

8. (Currently Amended) A system for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) means for transforming the digitized acoustic input signal to a time-frequency representation;

(b) ~~means for isolating transient sounds within the time-frequency representation;~~

(c) means for ~~utilizing transient detectors to detect~~ detecting transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

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(d) means for determining signal strength in the time-frequency representation;

(e) means for updating a background noise statistic based on the time-frequency representation when the signal strength is under a pre-selected threshold;

~~(d)~~(f) ~~means for rescaling the time-frequency representation of the estimated background noise;~~

~~(e)~~(g) mea ns for ~~comparing~~ performing a signal-to-noise ratio weighted comparison, when the signal strength is greater than the pre-selected threshold, of the ~~rescaled~~ time-frequency representation ~~of each transient containing any signal of interest with~~ against a plurality of time-frequency spectrogram templates in a signal model; ~~and~~

(h) means for determining a matching spectrogram template in the signal model that best matches such representation; and

~~(f)~~(i) means for replacing the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

9. (Currently Amended) A computer program, stored on a computer-readable medium, for enhancing acoustic signal buried in noise within a digitized

acoustic input signal, the computer program comprising instructions for causing a computer to:

(a) transform the digitized acoustic input signal to a time-frequency representation;

(b) ~~isolate transient sounds within the time-frequency representation;~~

(c) ~~use transient detectors to~~ detect transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

determine signal strength in the time-frequency representation;

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update a background noise statistic based on the time-frequency representation, when the signal strength is under a pre-selected threshold;

(d) rescale the time-frequency representation of the estimated background noise;

(e) ~~compare the rescaled~~ perform a signal-to-noise ratio weighted comparison, when the signal strength is greater than the pre-selected threshold, of the time-frequency representation ~~of each transient containing any signal of interest with~~ against a plurality of time-frequency spectrogram templates in a signal model; ~~and~~

(f) determine ~~determining~~ a matching spectrogram template in the signal model that best matches such representation; and

~~(f)~~(g) replace the digitized acoustic input signal with a low-noise output signal comprising a signal-to-noise ratio weighted mix of the time-frequency representation ~~digitized acoustic input signal~~ and the ~~best~~ matching spectrogram template.

10. (New) The method of claim 1, where the low-noise output signal comprises a low-noise spectrogram.

11. (New) The method of claim 10, further comprising synthesizing a time series output from the low-noise spectrogram.

12. (New) The method of claim 1, where the signal-to-noise ratio weighted mix, C, is determined according to:

C = w*P + (wmax - w)*T,

where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

13. (New) The system of claim 3, where the low-noise output signal comprises a low-noise spectrogram, and further comprising means for synthesizing a time series output as a sum of a harmonic part and a non-harmonic part derived from the low-noise spectrogram.

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14. (New) The system of claim 3, where the signal-to-noise ratio weighted mix, C, is determined according to:

C = w * P + (wmax - w) * T,

where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

15. (New) The computer-readable medium of claim 5, where the low-noise output signal comprises a low-noise spectrogram, and where the instructions further cause the computer to synthesize a time series output from the low-noise spectrogram.

16. (New) The computer-readable medium of claim 5, where the signal-to-noise ratio weighted mix, C, is determined according to:

C = w * P + (wmax - w) * T,

where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

17. (New) The method of claim 7, where the low-noise output signal comprises a low-noise spectrogram.

18. (New) The method of claim 17, further comprising synthesizing a time series output from the low-noise spectrogram.

19. (New) The method of claim 7, where the signal-to-noise ratio weighted mix, C, is determined according to:

$$C = w*P + (wmax - w)*T,$$

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where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

20. (New) The system of claim 8, where the low-noise output signal is a low-noise spectrogram, and further comprising means for synthesizing a time series output from the low-noise spectrogram.

21. (New) The system of claim 8, where the signal-to-noise ratio weighted mix, C, is determined according to:

$$C = w * P + (wmax - w) * T,$$

where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

22. (New) The computer-readable medium of claim 9, where the low-noise output signal comprises a low-noise spectrogram, and where the instructions further cause the computer to synthesize a time series output from the low-noise spectrogram.

23. (New) The computer-readable medium of claim 9, where the signal-to-noise ratio weighted mix, C, is determined according to:

$$C = w * P + (wmax - w) * T,$$

where 'w' comprises a signal-to-noise ratio proportional weight, 'wmax' comprises a pre-selected maximum weight, 'P' comprises the time-frequency representation, and 'T' comprises the matching spectrogram template.

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